

The Effect of Walnuts Consumption in Hemostasis

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Nuts are nutrient-dense foods rich in unsaturated fatty acids and other bioactive compounds, such fibre, vitamin E, phytosterols and polyphenols but also high in calories [1]. Many researches have shown that the consumption of nuts and especially walnuts can modulate hemostatic processes either in favor or against thrombotic complications. Hemostasis is accomplished through a network of processes responsible for the maintenance of proper blood flow under physiological conditions and inhibition of bleeding at sites of injured vasculature. This is achieved by an interplay of platelet aggregation/adhesion, coagulation and fibrinolysis [2,3]. Under pathological conditions this system can be shifted to either a procoagulant state leading to an anticoagulant/fibrinolytic state [4,5]. A dysregulation of the hemostatic system in arteries and veins underlies several pathological conditions, such as coronary myocardial infarction, ischemic stroke, pulmonary thromboembolism and disseminated intravascular coagulation etc [6-8].

Many researchers tried to shed light to the correlation of walnut consumption to the hemostasis. Most of them involved in people with metabolic syndrome or hyperlipidemia or obesity or at high CVD risk. Only one research, studies the effect of walnut consumption in 30 healthy males [9]. The results show that the daily consumption of 15g walnuts could not affect platelet-monocyte and platelet-neutrophil aggregation in comparison with placebo (diet without walnuts), but could reduce the aggregation during intervention period (4 weeks) in both groups. In another short term study in obese subjects with metabolic syndrome, the daily consumption of 48 g of walnuts did not affect circulating levels of thrombomodulin [10]. A postprandial study conducted by Wilson, *et al.* [11], deals with the effect of 30 g walnut oil containing 26 mg hydroxy fatty acids, HOFA in Factor VII. This factor activated to VIIa within hours after dietary fat. According to the results VIIa increased at 6 hours and VII remained constant, so edible oils which contain oxidized fat could activate VII factor and increase coronary risk in humans.

Concerning the rest studies only one shows a slight beneficial trend in coagulation factors such as tPA and PAI-1, in overweight subjects with signs of metabolic syndrome, who consumed 64 g walnuts per day [12]. Other researchers study the effect of walnut consumption in metabolic syndrome patients in more specific hemostasis factors such as Willebrand factor antigen, fibrinogen, factor VII coagulant activity, PAI-1 activity, but they didn't find a link between walnut consumption and hemostasis [13]. In hypercholesterolaemic subjects, Mediterranean diet supplementation with walnuts (replaced approximately 32% of the energy from monounsaturated fat), improves endothelial function [14]. Walnuts, could affect circulating adhesion molecules as shown by Chiang, *et al* [15]. The consumption of 42.5 g of walnuts 6 times per week, by normal to mildly hyperlipidemic men and women leads to an inhibition in E-selectin by 12.7%. According to Nergiz-Ünal, *et al.* [16], walnut or walnut oil didn't affect coagulation function or platelet aggregation in ApoE (-/-) mice, which were fed for eight weeks with a high fat diet supplemented with either walnuts, walnut oil or sunflower oil (control group).

Taking under consideration all these interesting results we can conclude that more studies are needed in order to draw firm conclusions. Walnuts are quite undervalued nuts, because many people avoid their consumption, due to their high content in energy and fat. Thus the studies can pinpoint that walnuts and generally nuts are very nutritious and can be included as necessary components of diet, because of the multiple observed beneficiary effects in hemostasis, but also hypolipidemic and hypoglycemic effect. So a nice directive would be the consumption 30 - 40g unsalted nuts 3 - 4 times per week.

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